Health Consultation

Long Painting Company:
Preliminary Evaluation of Air Emissions
Seattle, King County, Washington

June 2001

Prepared by
The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond quickly to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health.

For additional information or questions regarding DOH, ATSDR or the contents of this health consultation, please call the health advisor who prepared this document:

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Glossary

Acceptable Source Impact Level (ASIL)	An Acceptable Source Impact Level (ASIL) is a concentration of a toxic air contaminant in the outdoor atmosphere in any area that does not have restricted or controlled public access that is used to evaluate the air quality impacts of a single, new source. There are three types of ASILs: risk-based, threshold-based, and special. Concentrations for these three types of ASILs are established by the Board after public hearing and are listed in Appendix A of Puget Sound Air Agency Regulation III, and in WAC 173-460-150 and 173-460-160. An exceedance of an ASIL does not imply that adverse health effects will occur, but indicates that further evaluation should be conducted to examine potential health effects. If an ASIL is exceeded, an authorized air agency (i.e., PSCAA or EPA) may issue an order requiring the facility to perform an analysis in accordance with Section 2.07 of Regulation III. This includes submitting a more comprehensive evaluation, including the use of EPA guideline models and more accurate emission estimation techniques to demonstrate that the predicted concentration of each contaminant is below the ASIL. If this demonstration cannot be made, the agency would review a risk analysis after verifying that the best available control technologies are employed.
Agency for Toxic Substances and Disease **Registry (ATSDR)**	The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services.
Carcinogen	Any substance that can cause or contribute to the production of cancer.
Chronic	A long period of time. A chronic exposure is one which lasts for a year or longer.
Comparison value	A concentration of a chemical in soil, air or water that, if exceeded, requires further evaluation as a contaminant of potential health concern. The terms comparison value and screening level are often used synonymously.

Contaminant	Any chemical that exists in the environment or living organisms that is not normally found there.
Exposure	Contact with a chemical by swallowing, by breathing, or by direct contact (such as through the skin or eyes). Exposure may be short-term (acute) or long-term (chronic).
Hazardous Air Pollutant (HAP)	A Hazardous air pollutant (HAP) is any air pollutant listed in or pursuant to section 112(b) of the federal Clean Air Act, 42 U.S.C. §7412. HAPs are EPA-regulated pollutants of which there are about 188. All HAPs are Toxic Air Contaminants (TACs).
Hazardous substance	Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.
Indeterminate public health hazard	Sites for which no conclusions about public health hazard can be made because data are lacking.
Master Use Permit (MUP)	A permit being considered by the City of Seattle Department of Design, Construction, and Land Use (DCLU) which would provide for new building permits, building code upgrades, demolition permits, mechanical and electrical permits, Fire Department permits, and permits for new spraybooths, a blastbooth, new metalizing booth, and air emissions treatment systems.
Media	Soil, water, air, plants, animals, or any other part of the environment that can contain contaminants.
Model Toxics Control Act (MTCA)	The hazardous waste cleanup law for Washington State.
Organic	Compounds composed of carbon, including materials such as solvents, oils, and pesticides which are not easily dissolved in water.

Risk	The probability that something will cause injury, linked with the potential severity of that injury. Risk is usually indicated by how many extra cancers may appear in a group of people who are exposed to a particular substance at a given concentration, in a particular pathway, and for a specified period of time. For example, a 1%, or 1 in 100 risk indicates that for 100 people who may be exposed, 1 person may experience cancer as a result of the exposure.
Route of exposure	The way in which a person may contact a chemical substance that includes ingestion, skin contact and breathing.
Toxic Air Contaminant (TAC)	A Toxic Air Contaminant (TAC) is any air contaminant listed in Appendix A of Puget Sound Clean Air Agency Regulation III. TACs are regulated under 173-460 WAC and PSCAA Regulation III, of which there are several hundred. All HAPs are TACs.
Volatile organic compound (VOC)	An organic (carbon-containing) compound that evaporates (volatilizes) easily at room temperature. Many VOCs are commonly used as solvents.
U.S. Environmental Protection Agency (EPA)	Established in 1970 to bring together parts of various government agencies involved with the control of pollution.
Zinc Metallizing	Zinc metallizing is a process which melts zinc or zinc alloy metals, and then rapidly propels the molten zinc particles onto a prepared substrate, creating a lamellar or layered coating. Metallizing, or thermal spraying as it is often called, is an effective method of corrosion prevention, giving galvanic as well as barrier coating protection to iron and steel.

Background and Statement of Issues

As part of the cooperative agreement with ATSDR, the Washington State Department of Health (DOH) was asked to evaluate the potential impacts on human health posed by eight businesses in the South Park community. The petitioner, the Community Coalition for Environmental Justice (CCEJ), worked with area residents to prepare a list of sites of concern. One of the sites listed was the Long Painting Company (LPC). This health consultation addresses potential health issues related to air emissions from the LPC facility.

The South Park community is concerned about the potential public health impacts associated with exposure to LPC air emissions. A discussion of community concerns and complaints is summarized in a previous health consultation prepared by DOH. That health consultation evaluated the impacts of new equipment at the LPC South Park facility, including one baghouse and two Dry Filter System Spray Coating Booths, and recommended that an air quality impact analysis be conducted.[1] This consultation addresses that recommendation using data supplied by LPC. The primary data sources used in this evaluation are a Toxic Air Contaminants (TAC) database for 1998 air emissions, a 1998/1999 Air Contaminant Emission Report for Surface Coatings and Thinning Solvents (1998/1999 emissions report), and an air dispersion modeling report for 1999 air emissions (air modeling report).

DOH is also in the process of finalizing a health consultation which summarizes the results of metals concentrations in soil samples collected on residential and park properties near LPC in October 2000. After careful evaluation of all the data, DOH determined that metal concentrations were not at levels of public health concern.[2] When finalized, the soil metals health consultation will be mailed to residents whose properties were tested, involved agencies, and will be available to the public.

Site Background

Since 1972, LPC headquarters have been located at 8025 10th Avenue South, in Seattle, Washington (Figure 1). LPC is a commercial painting company that works primarily on large structures. Although over 90 percent of their work (painting) is done outside of South Park, painting, sandblasting, and zinc metallizing occur on-site.[3] LPC has expanded its property to include several lots on nearby streets in the South Park neighborhood of Seattle. These areas are used predominantly for equipment and materials storage, as well as for truck maintenance.

LPC has numerous paint spray booths at its South Park facility, as well as a baghouse for its sandblasting booth (used to collect dust when abrasive blasting occurs). The spray booths and baghouse operate under permits from the Puget Sound Clean Air Agency (PSCAA).[4] Two paint spray booths previously operated without a permit from PSCAA. LPC received an order of approval from PSCAA for these booths, but the approval was subsequently rescinded, and LPC has agreed not to use these booths. The Notice of Construction (NOC) filed with PSCAA in 1998 originally included an additional dust-collector for its zinc metallizing operation, which was subsequently omitted by LPC. According to LPC, the dust collector is not, or will not be used at

the LPC facility unless approved by PSCAA in the future. PSCAA conducts regular inspections at LPC as part of the permit and enforcement process. Emissions predominantly include volatile organic compounds (VOCs) that are contained in paints and thinning solvents. LPC paint spray sheds #1, #2, and #3 are used most frequently, and reportedly generate most of the odors.[3]

LPC has a Synthetic Minor Emissions permit which limits their emissions to up to 24 tons of any combination of Hazardous Air Pollutants (HAPs) during any consecutive 12 month period. Emissions of any single HAP is limited to 9.9 tons per year. Xylene emissions are limited to nine tons in a consecutive 12 month period.[5] As part of their Synthetic Minor Emissions Permit, LPC is required to maintain a monthly record of xylene and all products used at the facility that contribute to HAP emissions.[5] HAP and Toxic Air Contaminant (TAC) emissions from LPC are regulated under federal and state/local laws, respectively.[6,7] These laws are enforced by PSCAA.[8] The Synthetic Minor Emissions Permit states that the material balance method should be used to calculate the quantities of these emissions, that all records of HAP and TAC emissions be available to PSCAA personnel upon request, and that LPC should annually report to PSCAA all periods that exceed the emissions limits of the permit.[5]

PSCAA Regulation III, Section 1.11 requires the owner or operator of an air contaminant source to make reports to the Agency concerning the types and amounts of toxic air contaminants emitted and other relevant information needed to calculate such emissions.[8] LPC is required to calculate and accurately self-report emissions to PSCAA. PSCAA typically does not verify the emission estimates but does have the ability to audit results and evaluate the emission inventory procedures.

Discussion

The data provided in the1998 LPC TAC database is discussed below, along with a more recent 1999 emissions report for surface coatings and thinning solvents. Also discussed is the 1999 air dispersion modeling report provided by LPC which estimated maximum off-site concentrations of air pollutants originating from LPC.

Emissions Reporting

Historically, LPC provided PSCAA with an emissions inventory that included only six HAPs.[4] Although PSCAA requested a detailed toxic emission inventory in a 1998 emission inventory request, LPC submitted an incomplete toxic emission inventory report. Based on a review of documentation, there appeared to be confusion between the annual emission reports and the reporting required by the synthetic minor permit. When this was discovered during a DOH review in 1998, PSCAA requested that LPC submit a corrected toxic emission inventory as requested by DOH. This inventory, entitled *TAC Database for 1998*, was provided to PSCAA and made available to DOH. The TAC database, provided as a Microsoft Excel® spreadsheet, lists estimates of routine air releases from LPC.[9]

DOH reviewed LPC's 1998 TAC database, and found that it incorrectly listed the total gallons of paints and thinners used that year.[9] The TAC database also incorrectly listed the total pounds of VOCs in all paints and thinners used in 1998.[9] The value provided in the spreadsheet did not include the VOC content in the thinners used. LPC acknowledged these errors, and indicated that they occurred due to an error in the addition formulas in the spreadsheet, which did not include data from additional inserted lines for thinning solvents into the total. Table 1 below provides a comparison of LPC and DOH emissions estimates from the 1998 TAC database, and the revised estimates provided by LPC in their 1998/1999 Air Contaminant Emissions Report. Although the revised LPC values are not identical to the DOH estimates, they more closely approximate these values than LPC's original emissions estimates.

Table 1. Long Painting Company Emissions Inventory for 1998

Product	Original LPC Estimates [a]	DOH Estimates [a]	Revised LPC Estimates [b]
Gallons of paints/thinners used	14,201	17,056	16,256
Pounds of VOCs in paints/thinners	42,070	66,307	74,144

a = 1998 TAC database b = 1998/1999 Air Contaminant Emissions Report

The 1998/1999 emissions report lists the estimated quantity (in pounds) of volatile chemicals emitted from the LPC South Park facility during this time.[10] Although the total quantity of VOC emissions reportedly declined from 1998 to 1999, emissions for 47% of the surface coating chemicals and 67% of the thinning solvent chemicals increased (Appendix A). In addition, the relative percent of "other VOCs" increased during this time period (from 26 % of the total VOCs to 31 % of the total VOCs). Nearly one-third (31%) of the total reported quantity of 1999 surface coating and thinning solvent emissions were classified by LPC as "other VOCs", but little information regarding the nature of these VOCs was provided. DOH is concerned about the nature of these VOCs, and the associated potential health risks.

Air Dispersion Modeling

DOH received 1999 emissions information and air dispersion modeling parameters and results from LPC.[11] Based on discussions with PSCAA and Department of Ecology Air Quality Program staff, DOH is concerned that some of the modeling parameters used by LPC to estimate contaminant emissions may be inappropriate, potentially resulting in inaccurate emissions estimates (Table B1). Specific modeling parameters in question include 1) stack diameter; 2) building height; 3) meteorological assumptions; and 4) building dimensions. According to PSCAA, the approach used by LPC would result in too much exhaust momentum and plume rise. It also ignores the potentially significant impact of building wakes. Buildings must be included if they are greater than 40% of the stack height and are located within five building heights from

the stack. Additionally, modeling only stability class "C" was deemed unacceptable by PSCAA (personal communication with Gerry Pade, PSCAA, March 6, 2001).

Preliminary DOH air dispersion modeling results using 1998 emissions information from LPC indicated that ASILs may have been exceeded for methylene bis phenyl isocyanate, hexamethylene diisocyanate, and isophorone diisocyanate. Comparisons were made to ASILs based on a 24-hour average ambient air concentration. LPC has indicated that air emissions of isocyanates are not of concern based on their application method, and their physical and chemical properties. However, documentation provided by LPC to support this conclusion is not conclusive.

Current Emissions Controls

Paint spray booths

There are currently no VOC controls associated with spray painting operations, although particulate filters are used inside the paint spray booths to contain particulates generated during spray painting activities. PSCAA informed DOH that the existing particulate filters may not contain metals and metal fumes, however. Reportedly, the particulate filter integrity and paint spray booth restriction gauges are inspected and documented daily, and that exhaust filter replacements are conducted accordingly prior to any spray activities. A diesel-fired heater is used inside some of the spray booths to heat-cure residual VOCs, and reportedly generates some odors. Public Health - Seattle and King County expressed its concern to DOH about potential emissions from paint spray booth side vents, and the need for further attention using monitoring or modeling.[12]

Sandblasting

Sandblasting, using steel and garnet abrasives, is conducted to wear off the surface of materials in order to supply a finish prior to surface coating. At LPC, a baghouse is used to collect dust generated during sandblasting activities. According to PSCAA, the existing baghouse collects metals and metal fumes from blasting and grinding operations quite effectively. LPC also maintains a PM 2.5 μm particulate monitor at its South Park facility.

Zinc Metallizing

Zinc metallizing is a process which melts zinc or zinc alloy metals, and then rapidly propels the molten zinc particles onto a prepared substrate, creating a lamellar or layered coating. Metallizing, or thermal spraying as it is often called, is an effective method of corrosion prevention, giving galvanic as well as barrier coating protection to iron and steel. LPC uses a dust-collector to contain dust generated during zinc metallizing operations.

Planned Emissions Controls

As part of the facility-wide upgrade, LPC proposes to construct a VOC oxidizer which is intended to remove greater than 95% of the VOCs from the spray coating exhaust. The current biofilter is anticipated to be redesigned to remove 80% of the VOCs from the exhaust from the remaining VOC spray coating operation.

Conclusions

1. There is a history of odor, noise, dust, and health complaints from residents in the community surrounding the LPC facility.

2. Based on air emissions reports submitted to DOH by LPC, emissions quantities for numerous VOCs increased from 1998 to 1999. A significant percentage of LPC's air emissions were unspecified ("other") VOCs as reported in their 1998/1999 Air Contaminant Emissions Report, and little information regarding the nature of these VOCs was provided. Although not currently required, VOC air emission controls are not used in the LPC facility paint spray booths.

3. No efficiency source testing or air emissions monitoring has been conducted at the LPC South Park facility to verify air emissions.

4. Air modeling and air emissions information supplied to DOH do not appear to be adequate for assessing whether exposures may be occurring at levels of health concern in the community near LPC. Based on conversations with PSCAA and Ecology air staff, some of the air emissions modeling parameters used by LPC were not appropriate, potentially resulting in an underestimation of contaminant concentrations. As a result, air *emissions from LPC pose an indeterminate health risk.*

Recommendations/Public Health Action Plan

1. DOH recommends *air emissions monitoring* at the primary spray shed emission point (i.e., the emission stacks) in order to better evaluate impacts on ambient air in the surrounding community. DOH recommends air emissions monitoring both before and after implementation of the proposed air emissions control system(s) to establish a baseline emission level and to verify the effectiveness of the emissions control system after its implementation.

2. Paint spray sheds #1, #2, and #3 should be the main focus of the VOC emissions monitoring. Air emissions monitoring should be performed *in addition* to the initial efficiency source testing which PSCAA will require as a condition of the Master Use Permit, and after installation of the proposed new control equipment. Efficiency source testing should be conducted periodically, to assure the effectiveness of the air emissions treatment system. Contaminants of potential concern (based on air emissions reports provided by LPC) include methylene bis phenyl isocyanate, hexamethylene diisocyanate,

and isophorone diisocyanate, although a fuller range of VOCs should initially be included in the analysis. Emissions monitoring should coincide with spray operations anticipated to generate the greatest quantity of paints/VOCs. LPC should work closely with PSCAA and DOH during development of an emissions monitoring plan.

3. Air emissions monitoring results should be used to calculate exposure point concentrations using appropriate air dispersion modeling. If the exposure point concentrations exceed levels established for the protection of human health, emissions levels should be reduced, or the emissions treatment system should be maintained, modified, or replaced as appropriate, using engineering controls.

Action

Results of efficiency source testing/air emissions monitoring and modeling should be provided to PSCAA and DOH for evaluation. Efficiency source testing/air emissions monitoring will provide more accurate data in which to estimate offsite air impacts in the neighborhood surrounding the LPC facility.

4. LPC should maintain their air emissions database. A previous (1998) LPC air emissions inventory incorrectly listed the total gallons of paints and thinners used, as well as the total pounds of VOCs in all paints and thinners used that year. Such reporting errors could result in erroneous estimates of offsite air emissions and health impacts.

5. LPC should maintain documentation which clearly and correctly explains the procedures used to calculate air emissions.

6. PSCAA should conduct periodic, detailed LPC facility audits. The audits should include a materials (paint/solvent) inventory assessment, and a detailed evaluation of LPC's emissions inventory procedures and air dispersion modeling parameters.

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Figure 1

Appendix A

Table A1. 1998/1999 LPC Air Contaminant Emissions Report (Surface Coating)

Year	Process Quantity	Units
1998	13,367	Gal
1999	10,848	Gal

CAS #	Air Contaminants:	Pounds 1998	Pounds 1999
43102	Naphtha	0	600
43107	Glycol Ethers	0	78
43207	Other VOC	15,502	15,502
50-00-0	Formaldehyde	0	4
64-17-5	Ethanol	269	1319
67-56-1	Methanol	679	617
67-63-0	Isopropyl Alcohol	1074	966
67-64-1	Acetone	0	193
71-23-8	n-Propyl Alcohol	22	0

71-36-3	N-Butyl Alcohol	1899	988
78-10-4	Ethyl Silicate	31	148
78-83-1	Isobutyl Alcohol	2	164
78-92-2	sec-Butyl Alcohol	4	0
78-93-3	Methyl Ethyl Ketone	341	487
79-01-6	Trichloroethylene	1	0
84-74-2	Dibutyl Phthalate	0	1
91-20-3	Naphthalene	153	53
100-41-4	Ethyl Benzene	1101	857
101-68-8	Methylene bis (phenyl isocyanate)	1561	496
106-89-8	Epichlorohydrin	10	5
106-97-8	Butane	0	6
107-21-1	Ethylene Glycol	2	2
107-87-9	Methyl Propyl Ketone	48	413
107-98-2	Prop. Gly. Mono Methyl Ether	755	234
108-10-1	Methyl Isobutyl Ketone	2012	344
108-21-4	Isopropyl Acetate	0	35
108-87-2	Methylcyclohexane	0	0
108-88-3	Toluene	768	1317
108-94-1	Cyclohexanone	17	79
109-60-4	N-Propyl Acetate	0	6
110-12-3	Methyl Isoamyl Ketone	10	0
110-19-0	Isobutyl Acetate	3	392
110-43-0	Methyl N-Amyl Ketone	4964	3754
111-15-9	2-Ethoxyethyl Acetate	19	578
111-76-2	2-Butoxyethanol	126	169.5
117-81-7	Dioctyl Phthalate (DEHP)	61	33
123-42-2	Diacetone Alcohol	13	0
123-86-4	N-Butyl Acetate	2208	1722
141-78-6	Ethyl Acetate	179	1
142-82-5	Heptane	0	0
628-63-7	Amyl Acetate	0	33
681-84-5	Methyl Silicate	10	59
822-06-0	HDI Isocyanate	65	63
1330-20-7	Xylene	13,225	7921
2551-13-7	Trimethyl Benzene	102	135.5
4098-71-9	Isophorone Diisocyanate	28	21
7664-38-2	Orthophosphoric Acid	24	3
8032-32-4	V M &P Naptha	91	36
7429-90-5	Aluminum	0	4
1309-37-1	Iron Oxide Fume	0	1
1314-13-2	Zinc Oxide Fume	0	29

Volatile Organic Compounds Total (V)	54,484	39,904
Toxic Air Contaminants Total (T)	31,877	24,368
Hazardous Air Pollutants total (H)	20,105	12,447.5

Table A2. 1998/1999 LPC Air Contaminant Emissions Report (Thinning Solvents)

Year	Process Quantity	Units
1998	2889	Gal
1999	2376	Gal

CAS #	Air Contaminants:	Pounds 1998	Pounds 1999
43102	Naphtha	0	775
43207	Other VOC	4089	1844
64-17-5	Ethanol	0	28
67-63-0	Isopropyl Alcohol	0	755
67-64-1	Acetone	0	232
71-23-8	n-Propyl Alcohol	22	0
71-36-3	N-Butyl Alcohol	0	514
75-09-02	Methylene Chloride	0	2
78-92-2	sec-Butyl alcohol	4	0
78-93-3	Methyl Ethyl Ketone	8992	5617
79-01-6	Trichloroethylene	1	0
91-20-3	Naphthalene	0	15
100-41-4	Ethyl Benzene	485	242
107-98-2	Prop. Gly. Mono Methyl Ether	0	274
108-10-1	Methyl Isobutyl Ketone	2012	1296
108-21-4	Isopropyl Acetate	0	29
108-87-2	Methylcyclohexane	0	14
108-88-3	Toluene	471	469
108-94-1	Cyclohexanone	0	10
110-19-0	Isobutyl Acetate	0	36
110-43-0	Methyl N-Amyl Ketone	0	429
111-76-2	2-Butoxyethanol	0	67.5
123-86-4	N-Butyl Acetate	0	64
141-78-6	Ethyl Acetate	0	1
142-82-5	Heptane	0	14
1330-20-7	Xylene	3611	3245
2551-13-7	Trimethyl Benzene	0	7.5
	Volatile Organic Compounds Total (V)	19,660	15,981
	Toxic Air Contaminants Total (T)	15,571	14,137
	Hazardous Air Pollutants total (H)	15,571	10,938.5

Appendix B

DOH Air Dispersion Modeling Assumptions

For SCREEN 3 dispersion modeling, the following conservative assumptions were used to assume a worst-case scenario for emissions. All paints and thinners were assumed to be emitted through a single spray booth within a two-hour period. Long Painting has told PSCAA and DOH that they typically use a paint spray booth for only two hours a day. Data in the Notice of Construction Application 7582, the subject of the previous Health Consultation, were used to determine building size and exit velocity. DOH's modeling inputs are listed in Table B1 below.

To calculate an emissions rate for each TAC, the following equation was used:

- Emissions (grams/second) = grams emitted/year **x** 1yr/520hrs **x** 1hr/60min. **x** 1min/60sec.

- 520 hours represents spray booth usage for: 2 hrs/day **x** 5 days/week **x** 52 weeks/year.

To convert one-hour concentrations to a 24-hour average, a factor of 0.40 was applied.
To convert one-hour concentrations to an annual average, a factor of 0.10 was applied.

For all TACs, the values used from the DOH database represent only 86% of the total volume of paints and thinners used. As a result, actual emission rates and ambient concentrations will be higher than values determined in the modeling.

Table B1
SCREEN 3 Air Dispersion Modeling Inputs

Air Dispersion Modeling Parameters	LPC's Air Dispersion Modeling Inputs	DOH's Air Dispersion Modeling Inputs	Comments on LPC's Air Dispersion Modeling Inputs
Source type	Point	Point	OK
Stack height	9.14 meters	9.14 meters	OK
Stack diameter	15 meters	0.8636 meters	
Stack exit velocity	0.588 m/s	9.7 m/s	
Flow rate	220,000 cfm	12,000 cfm	Would result in too much exhaust momentum and plume rise. Need to use the actual stack exhaust parameters.
Cavity	Regulatory default	Regulatory default	OK
Stack exit gas temp	300 K	293.15 K	This should be the same as ambient, unless the building is heated. If the building is heated, the actual room air temperature should be used (68 F = 293 K, 80 F = 300 K).
Ambient air temperature	293 K	293.15 K	OK
Receptor height	1.5 meters	1.5 meters	
Urban/rural option	Urban	Urban	OK
Bldg. Height	Zero	7.3 meters	Ignores the potentially significant impact of building wakes. Buildings must be included if they are greater than 40% of the stack height and are located within five building heights from the stack
Terrain	Flat	Flat	OK
Meteorology	Single "C"	All stab. & WS	Stability Class C deemed unacceptable by PSCAA. Need to use all stability classes, not just C.
Minimum Horizontal Building Dimension	zero	10 meters	Ignores the potentially significant impact of building wakes. Buildings must be included if they are greater than 40% of the stack height and are located within five building heights from the stack
Maximum Horizontal Building Dimension	zero	17 meters	Same as above
Anemometer height	10 meters	10 meters	OK
Work hours	2,200 hours/year	520 hours/year	
Distance to Max. Contam. Concentration	32 meters	29 meters	

References

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11. Long Painting Company. Calculated Impact Levels at Distances From Source for 1999: Long Painting Co., South Park facility. February 22, 2001.

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18. Seattle Weekly. Articles on Long Painting Company air emission concerns. January/February 2001.

19. Long Painting Company. Washington State Environmental Policy Act (SEPA) Checklist for Master Use Permit (MUP) for Long Painting Company. June 2000.

20. Personal communications with Gerry Pade, Tom Hudson, and John Anderson (PSCAA), Clint Bowman (Department of Ecology), Scott Kemp (DCLU), Richard Stedman (OAPCA), Mark Johns (AMEC Earth & Environmental, Inc.), and Brian Vance (LPC). January 2001 to present.

Concurrence

This Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

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SPS, SSAB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with proposed actions that reduce or prevent adverse health effects as prudent public health policy.

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Richard Gillig
Chief
State Program Section, ATSDR